AMENDMENTS TO THE CLAIMS:

This listing of the claims will replace all prior versions, and listings, of the claims in this application:

Please cancel claims 20, 28, 29, 33-37, 39, 40, 42, 45, 46, and 50.

Listing of Claims:

1.-18. (Canceled)

19. (Currently Amended) A diffusion barrier comprising a plurality of stacked sub-layers, each sub-layer having a thickness of about 0.4 to about 1.5 ~~4.5~~ nanometers (nm), ~~which is predetermined~~ to inhibit the formation of a crystalline lattice, wherein the plurality of stacked sub-layers are arranged collectively to inhibit diffusion of a chemical species through the diffusion barrier, wherein a successive sub-layer comprises a different material from a material that comprises a preceding sub-layer and the different materials selected to comprise the sub-layers are substantially immiscible and exhibit mutual adhesion, and the overall thickness of the diffusion barrier is between about 30 and 50 angstroms.

20. (Canceled)

21. (Currently Amended) A diffusion barrier as in claim 19 ~~20~~, where one of the materials is scandium (Sc).

22. (Currently Amended) A diffusion barrier as in claim 19 ~~20~~, where one of the materials is copper (Cu).

23. (Currently Amended) A diffusion barrier as in claim 19 ~~20~~, where one of the materials is yttrium (Y).

24. (Currently Amended) A diffusion barrier as in claim 19 ~~20~~, where one of the materials is lanthanum (La).

25. (Currently Amended) A diffusion barrier as in claim 19 ~~20~~, where one of the materials is tantalum (Ta).

26. (Currently Amended) A diffusion barrier as in claim 19 ~~20~~, where one of the materials is a metal nitride.

27. (Currently Amended) A diffusion barrier as in claim 19 ~~20~~, where one of the materials is an oxide.

28. (Canceled)

29. (Canceled)

30. (Withdrawn) An integrated circuit comprising a substrate, having an electrically conductive feature disposed on said substrate, further comprising a diffusion barrier interposed between said substrate and said electrically conductive feature, said diffusion barrier comprising a plurality of stacked sub-layers, each sub-layer having a thickness predetermined to inhibit the formation of a crystalline lattice.

31. (Withdrawn) An integrated circuit as in claim 30, where at least one of said sub-layers is comprised of a metal.

32. (Withdrawn) A circuit structure comprising a substrate and an electrical interconnect comprised of copper (Cu), further comprising a diffusion barrier interposed between said substrate and said electrical interconnect, said diffusion barrier comprising a plurality of stacked sub-layers.

33. (Canceled).

34. (Canceled).

35. (Canceled).

36. (Canceled).

37. (Canceled).

38. (Currently Amended) A multilayer diffusion barrier comprised of interfaces and atomically thin films in which surface adhesion of each interface inhibits the formation of a lattice in the films ~~individual film layers~~, inhibiting diffusion across the barrier, wherein thickness of each film is in a range of about 0.4 to about 1.5 ~~4.5~~ nm, wherein a successive film comprises a different material from a material that comprises a preceding film.

39. (Canceled)

40. (Canceled)

41. (Currently Amended) A multilayer structure comprised of three or more sub-layers each having a thickness of about 0.4 to about 1.5 ~~4.5~~ nanometers (nm) and an interface, wherein the interface of each of the sub-layers dominates a lattice formation on the sub-layers, preventing the formation of a lattice and grain boundaries, the multilayer structure being arranged to inhibit diffusion of a chemical species through the structure, wherein a successive sub-layer comprises a different material from a material that comprises a preceding sub-layer.

42. (Canceled)

43. (Currently Amended) A multilayer diffusion barrier for inhibiting diffusion of chemical species there through, comprising a plurality of stacked layers ~~comprised of alternating films of at least two different metals~~, the thickness of each of said films being between about 0.4 to about 4.5 nm, which is predetermined to substantially eliminate work hardening, wherein a successive layer of the plurality of stacked layers comprises a

different metal from a metal that comprises a preceding layer of the plurality of stacked layers.

44. (Currently Amended) A multilayer structure comprised of at least two films forming a bond at an interface between each film, each film having a thickness of about 0.4 to about 1.5 ~~4.5~~ nm, wherein the interface dominates a lattice formation, inhibiting the formation of a lattice and grain boundaries, wherein a successive film comprises a different material from a material that comprises a preceding film, wherein at least one of the films comprises a dielectric material.

45. (Canceled)

46. (Canceled)

47. (Currently Amended) The multilayer structure of claim 44 ~~45~~, wherein the at least two materials exhibit mutual adhesion and are substantially immiscible.

48. (Currently Amended) The multilayer structure of claim 44 ~~45~~, wherein at least one of the materials is a metal.

49 (Currently Amended) The multilayer structure of claim 44 ~~45~~, wherein at least one of the materials is a nitride.

50. (Canceled)

51. (Currently Amended) The multilayer structure of claim 44 ~~45~~ comprising three or more layers.

52. (Previously Presented) The multilayer structure of claim 44, having flexibility and inhibited work hardening.

53. (Previously Presented) The multilayer structure of claim 44, which is a diffusion

barrier between two materials that are otherwise capable of combining chemically or between a layer and a surface capable of chemically combining with the layer.

54. (New) A diffusion barrier as in claim 19, where said sub-layers are alternately comprised of copper (Cu) and tantalum (Ta).

55. (New) A diffusion barrier as in claim 19, where said sub-layers are alternately comprised of scandium (Sc) and tantalum (Ta).

56. (New) A diffusion barrier as in claim 19, where said sub-layers are alternately comprised of yttrium (Y) and tantalum (Ta).

57. (New) A diffusion barrier as in claim 19, where said sub-layers are alternately comprised of lanthanum (La) and tantalum (Ta).

58. (New) A diffusion barrier as in claim 19, where at least one of the sub-layers comprises a metal nitride.

59. (New) A diffusion barrier as in claim 19, where said sub-layers are alternately comprised of tantalum nitride (TaN) and titanium nitride (TiN).

60. (New) A diffusion barrier as in claim 19, where said sub-layers are alternately comprised of different materials that exclude both tantalum nitride (TaN) and titanium nitride (TiN).

61. (New) A diffusion barrier as in claim 19, where the plurality of sub-layers are between three and ten in number.